

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

- 1 1. (Currently Amended) An apparatus for acknowledging a data transfer, comprising:
2 a processor configured to transfer data according to a plurality of protocols of a protocol
3 stack, the protocol stack comprising:
4 a first protocol layer to initiate ~~for initiating~~ a request for a data transfer; and
5 a second protocol layer to for:
6 ~~receiving~~ receive the request for the data transfer from the first protocol layer;
7 ~~determining~~ determine whether the request for the data transfer contains a request
8 for acknowledgement of completion of the data transfer;
9 ~~sending~~ send a performance request corresponding to the request for data transfer
10 to a third protocol layer; and
11 if the request for data transfer does contain a request for acknowledgement of the
12 completion of the data transfer, ~~setting~~ set a variable in memory to wait for an event ~~to~~
13 ~~correspond~~ corresponding to the completion of the request for data transfer and ~~sending~~ send an
14 acknowledgement to the first protocol layer upon the occurrence of the event.
- 1 2. (Currently Amended) The apparatus set forth in claim 1, wherein the first protocol layer is
2 an internet small computer systems interface ("iSCSI") protocol layer.
- 1 3. (Currently Amended) The apparatus set forth in claim 1, wherein the second protocol
2 layer is an internet small computer systems interface extensions for remote direct memory access
3 ("iSER") protocol layer.
- 1 4. (Original) The apparatus set forth in claim 1, wherein the request for the data transfer
2 comprises an attribute that indicates the request for acknowledgement of completion of the data
3 transfer.

1 5. (Currently Amended) The apparatus set forth in claim 4, wherein a value of an error
2 recovery level is notified to the second protocol layer from the first protocol layer.

1 6. (Currently Amended) The apparatus set forth in claim 1, wherein the third protocol layer
2 is a remote direct memory access ("RDMA") protocol layer.

1 7. (Original) The apparatus set forth in claim 1, wherein the event relates to a zero length
2 remote direct memory access ("RDMA") read completion.

1 8. (Currently Amended) A network arrangement, comprising:
2 a plurality of systems, at least one of the plurality of systems comprising a protocol stack
3 and a process;
4 at least one input/output device;
5 a network that connects the plurality of systems and the at least one input/output device
6 for communication; and
7 wherein the protocol stack comprises:
8 a first protocol layer to interact ~~for interacting~~ with a consumer;
9 a second protocol layer to ~~[[for]]~~:
10 ~~receiving~~ receive a data exchange request from the first protocol layer;
11 ~~examining~~ examine the data exchange request to determine if an
12 acknowledgement request is indicated;
13 ~~sending~~ send a performance request corresponding to the data exchange
14 request to a third protocol layer; and
15 if the data exchange request contains the acknowledgement request,
16 ~~setting~~ set a variable in memory to wait for an event that corresponds to the completion of the
17 performance request and ~~sending~~ send an acknowledgement to the first protocol layer upon the
18 occurrence of the event.

1 9. (Currently Amended) The network arrangement set forth in claim 8, wherein the third
2 protocol layer interacts with the second protocol layer and the third protocol layer is to ~~[[for]]~~:
3 ~~receiving~~ receive the performance request that corresponds to the data exchange
4 request; and
5 ~~transmitting~~ transmit a message to ~~one of the~~ at least one of the plurality of
6 systems and the at least one input/output device via the network.

1 10. (Currently Amended) The network arrangement set forth in claim 9, comprising a remote
2 direct memory access network interface card ("RNIC") that is used by the protocol stack to
3 exchange the message between the at least one of the plurality of systems and the at least one
4 input/output device via the network.

1 11. (Currently Amended) The network arrangement set forth in claim 9, wherein the message
2 is a remote direct memory access ("RDMA") write message.

1 12. (Currently Amended) The network arrangement set forth in claim 9, wherein the message
2 is a zero length remote direct memory access ("RDMA") read message.

1 13. (Currently Amended) The network arrangement set forth in claim 8, wherein the second
2 protocol layer is an internet small computer systems interface extensions for remote direct
3 memory access ("iSER") protocol.

1 14. (Currently Amended) The network arrangement set forth in claim 8, wherein the data
2 exchange request comprises an attribute and data.

1 15. (Currently Amended) The network arrangement set forth in claim 8, wherein the process
2 operates according to a small computer systems interface protocol ("SCSI").

1 16. (Currently Amended) A method of acknowledging a data transfer, the method comprising:
2 transferring data according to a plurality of protocols;
3 receiving, from a first protocol layer by a second protocol layer, a request for a data
4 transfer ~~according to a first protocol~~;
5 determining, by the second protocol layer, whether the request for the data transfer
6 contains a request for acknowledgement of completion of the data transfer;
7 sending, by the second protocol layer, a performance request corresponding to the request
8 for data transfer according to a ~~second~~ third protocol layer; and
9 if the request for data transfer does contain a request for acknowledgement of completion
10 of the data transfer, the second protocol layer setting a variable in memory to wait for an event
11 corresponding to completion of the data transfer and sending an acknowledgement to the first
12 protocol layer upon the occurrence of the event.

1 17. (Currently Amended) The method set forth in claim 16, comprising defining the first
2 protocol layer as an internet small computer systems interface ("iSCSI") protocol layer.

1 18. (Currently Amended) The method set forth in claim 16, comprising defining the second
2 protocol layer as a remote direct memory access ("RDMA") protocol layer.

1 19. (Original) The method set forth in claim 16, comprising defining the event to relate to a
2 zero length remote direct memory access ("RDMA") read message completion.

1 20. (Original) The method set forth in claim 16, comprising defining the event to relate to a
2 remote direct memory access ("RDMA") write message completion.

1 21. (Currently Amended) The method set forth in claim 16, comprising establishing an
2 error recovery level by the first protocol layer to indicate the error recovery level in the request
3 for acknowledgement of completion of the data transfer.

1 22. (Previously Presented) An apparatus for acknowledging a data transfer, comprising:
2 means for receiving a request for a data transfer according to first protocol;
3 means for determining whether the request for the data transfer contains a request for
4 acknowledgement of completion of the data transfer according to a second protocol;
5 means for sending a performance request corresponding to the request for data transfer
6 according to a third protocol; and
7 means for setting a variable in memory to wait for an event to correspond to the
8 completion of the performance request and sending an acknowledgement according to the first
9 protocol upon the occurrence of the event if the request for the data transfer does contain the
10 request for acknowledgement of completion of the data transfer.

23. (Currently Amended) A computer storage medium storing a program for acknowledging a data transfer, the program executable on a processor node and comprising:

first protocol code for performing a first protocol stored on the computer storage medium for generating a request for a data transfer; and

second protocol code for performing a second protocol stored on the computer storage medium for:

receiving the request for the data transfer from the first protocol code;

determining whether the request for the data transfer contains a request for acknowledgement of completion of the data transfer;

sending a performance request corresponding to the request for data transfer to a third protocol code; and

setting a variable in memory to wait for an event to correspond to the completion of the performance request and sending an acknowledgement to the first protocol code upon the occurrence of the event if the request for data transfer does contain a request for acknowledgement of completion of the data transfer.